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Procedures for Developing a Policy-Oriented Classification of Nonmetropolitan Counties

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ABSTRACT

This report documents the procedures and results of classifying U.S. nonmetro counties into seven socioeconomic types: agriculture, government, manufacturing, mining, Federal lands, poverty, and retirement. The classification accounted for 2,073 of 2,443 counties falling into one or more types. Sixty percent fell into only one of seven types with the least amount of overlap occurring for the agriculture and manufacturing counties. The largest amount of overlap occurred among the poverty and Federal lands counties. An evaluation of the classification highlights the growing diversity in rural areas and the expanding nonagricultural character of rural America through the rise of new industrial specializations.

Key words: Economic base, economic specialization, developmental policy, nonmetropolitan, county classification, rural development, typology.

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CONTENTS

	<u>Page</u>
SUMMARY.....	iv
INTRODUCTION.....	1
RATIONALE.....	2
Rural Change and Diversity.....	2
National Rural Policy.....	4
APPROACH, DATA, AND METHODS.....	5
DEVELOPING THE INITIAL CLASSIFICATION.....	8
Reducing the Criterion Variables.....	8
Establishing Cutting Points.....	10
The Initial Classification.....	10
MODIFYING THE CLASSIFICATION.....	14
Unclassified Counties.....	14
The Final Classification.....	16
COMPARING THE COUNTY TYPES.....	16
DISCUSSION.....	20
LITERATURE CITED.....	22
APPENDIX TABLES.....	26

SUMMARY

This report documents the procedures and results of classifying U.S. nonmetropolitan counties into seven socioeconomic types. Four of the types reflect dependence on particular kinds of economic activities: agriculture, government, manufacturing, and mining. The underlying themes of two dimensions, poverty and retirement, are social. The final type, Federal lands, denotes land use and its control. The analysis classified 2,073 (85 percent of the total) nonmetro counties into one or more types. The number of counties remaining unclassified by the scheme was 370.

The research demonstrates, first, that the diversity of social, economic, and demographic conditions in rural America can be translated into a few distinct patterns potentially useful to rural development policy. Nearly 60 percent of the 2,073 counties in the final classification system were pure types, represented in only one of the seven groups. Furthermore, over half of the counties in each of three economic base types--agriculture, mining, and manufacturing--were pure types.

The results also show the expanding nonagricultural character of rural America and the rise of new industrial specializations. Although over 700 counties fell in the agriculture category, nearly 50 percent of all counties were represented in the government, mining, or manufacturing counties. An extremely small number overlapped with agriculture. This suggests that the rapid industrial changes in rural America have not necessarily led to industrial diversification with a balanced mix of agriculture and other industries within a county. Rather, agriculture has been replaced by new economic specializations springing up in some locations.

The range of social, economic, and demographic differences characterizing the counties illustrates the distinctive profiles distinguishing the types. For example, a striking feature of the poverty counties is the extent of disadvantage. These counties not only contain a high proportion of people who lack the personal skills and resources to improve their own economic conditions, but the size, location, and isolation of many persistent poverty counties constrain the generation of the economic, community, and human resources necessary to enable disadvantaged people to improve their poverty condition.

Procedures for Developing a Policy-Oriented Classification of Nonmetropolitan Counties

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INTRODUCTION

Developing national policy initiatives for rural development requires a new understanding of the social, economic, and demographic diversity that characterizes rural America. "Failure to recognize the diversity within the rural sector and between rural and urban areas has resulted in national growth and development policies insensitive to the spatial distribution of the effect" (33).¹ At the same time, national rural development policies realistically must focus on broad problems and issues common to many areas and groups of rural people.

This report documents a research effort to classify the major sociodemographic and economic patterns characterizing nonmetro counties in the United States.² A basic premise of the research is that rural diversity can be summarized into a few underlying patterns that may serve as a mechanism for policy-oriented research and, in turn, provide new perspectives on policy issues. The classification is one aspect of a U.S. Department of Agriculture project aimed at analyzing the attributes of rural areas that may contribute to the formulation and evaluation of the national rural development policies and programs.³

The classification serves several purposes. First, it provides a general framework for translating the social, economic, and demographic diversity existing in rural areas into a small number of meaningful dimensions. Second, the dimensions themselves may be treated as a framework for examining the effects of various kinds of public policies and secular forces on rural

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¹ Underscored numerals in parentheses refer to items in the Literature Cited section.

² As classified in 1974. The terms, nonmetro and rural, are used interchangeably throughout the report.

³ The classification was developed in the first phase of the Economic Development Division's Rural Policies Project (7). The project leader is Lloyd Bender; others on the research team include Peggy Ross, Leon Perkinson, Marlys Nelson, John Kuehn, Thomas Hady, and Bernal Green. Other papers also deal with the classification (6, 13, 14, 37).

development. For example, Deavers and Brown (14) use four categories of the classification to consider the influence of natural resource dependence on population change and income levels. This report documents procedures used to construct the seven-category classification of nonmetro counties from national data sources. Rationale for the classification is presented below.

RATIONALE

This section examines the enormous social, economic, and demographic changes and the resulting diversity occurring in rural America over several decades (8). It also briefly traces the emergence of national rural development policy by highlighting some of the programs that have been specifically targeted to selected county or multicounty units.

Rural Change and Diversity

Prior to World War II, agriculture was a dominant force shaping the economic and social character of rural America. The number of U.S. farms peaked at nearly 7 million in 1935; the farm population was 25 percent of the total population (3, 44). Not only were geographic regions distinguished by their primary agricultural products--cotton in the South, corn in the Midwest--but major socio-cultural differences occurred along the lines of agricultural regions (21).

Following World War II, technological, social, economic, and demographic forces converged as a catalyst for tremendous change and diversification in rural America. Some of the events precipitating change included the spread of mechanized agriculture, introduction of new agricultural products and modes of production, improved transportation and communication, significant alteration in the composition of the labor force, changing age structure of the population, and rising incomes and higher standards of living.

Between 1950-1970, changes in rural America were indicated by several distinct patterns:

- The dominance of agriculture declined steadily. The number of farms dropped to under 3 million, and farm population was less than 10 percent of total U.S. population by the late 1960's (3, 44).
- Steady rural-to-urban outmigration characterized the population movement; however, the size of the total nonmetro population remained stable (25).⁴ Rural industrialization began to open up new job opportunities, particularly in manufacturing (41).
- Farm and nonfarm women began to enter the labor market in record numbers. Nearly 90 percent of nonmetro jobs opening up from employment growth during the 1960's were taken by female workers. About 36 percent of women aged 14 years and over were in the labor force in 1970 (9).
- Median family incomes (in current dollars) steadily rose, and the incidence of rural poverty dropped about 1 percentage point per year in the

⁴ Although nonmetro areas experienced a 3-million net outmigration of population in the 1960's, nonmetro population grew by 2.3 million from natural increase (35).

decade beginning with the mid-1950's (43). However, a disproportionate number of the Nation's poor lived in rural areas (31).

Many of these changes for nonmetro America continued through the 1970's. Between 1959 and 1979, median family incomes (in current dollars) climbed from \$4,485 to \$16,539 and incidence of poverty (persons with incomes below poverty level) decreased from 22.4 to 15.2 percent of nonmetro population.^{5,6} Women's labor force participation increased by over 15 percentage points during the decade.

Industrial structure in nonmetro areas changed. Manufacturing grew during the 1950's and 1960's, and the changes continued in the 1970's through employment growth in the service-producing sector. Although the proportion of employment in manufacturing jobs declined slightly from 27 percent in 1969 to 24 percent in 1979, service-producing jobs accounted for 64 percent of total wage and salary employment in 1979 (29).⁷ The services division alone accounted for 16 percent of nonmetro employment. With agriculture declining, nonmetro employment composition thus began to more closely resemble that of metro areas.

The 1970's also marked the beginning of the population turnaround, an unexpected reversal of the rural-to-urban migration trend that spanned previous decades (2, 3, 5). Because of increased migration out of metro areas and decreased migration from nonmetro areas, population growth rates in nonmetro areas consistently surpassed rates of metro growth. Between 1970-1980, the population of nonmetro areas grew by 15.4 percent compared with 9.1 percent for metro areas (4). Demographers have cited both economic and noneconomic factors underlying the turnaround (26, 47). Industrial expansion into nonmetro places created new job opportunities to retain old residents and attract new ones. Rising incomes and changing standards of living enabled many people, including large numbers of retirees, to move into areas offering physical and social amenities, especially recreational benefits (19).

Patterns of post-1970 nonmetro turnaround growth have been characterized by considerable variability and lack of conformity to traditional geographic (ecological) and economic base explanations (26). First, population growth has been uneven among nonmetro counties, with approximately one in five experiencing population decline (28). Second, nonmetro growth within counties has not yet

⁵ After adjustment for inflation to the 1979 base (11), 1959 income increased to \$11,168. Thus, real income increase is \$5,371, or 48 percent.

⁶ Data from 1980 Census of Population and Housing. Recent Current Population Survey data indicate rises in poverty incidence in both metro and nonmetro areas in 1980-82.

⁷ Nonmetro labor force participation rate in 1982 was 49.8 percent for females aged 16 years and over, according to unpublished Current Population Survey (CPS) data.

⁸ Includes transportation, communications, public utilities; wholesale and retail trade; finance, insurance, and real estate; and government, as well as the services division.

Includes personal services; private household services; miscellaneous business and repair services, including auto; amusement and recreation services, including motion pictures; professional, social, and related services, including medical, legal, and private educational services; and hotels and other lodging places.

followed the expected patterns associated with either urban sprawl or economic expansion. Rather, growth within counties has been marked by deconcentration of population into even the most rural parts. Furthermore, geographic and economic factors which had high explanatory power in previous decades explained only a small percentage of differential growth during the 1970's (26).

The uneven patterns of the foregoing social, economic, and demographic changes have resulted in enormous diversity among and within nonmetro places. In the past, many differences among rural communities could be attributed to variation in urban influence or to economic specialization. Much more far-reaching, the present diversity in rural communities extends into many aspects of life including population, economy, government, social institutions, and even sociocultural character.

The economic and social conditions in prior decades spawned a variety of development programs and policies. Many were targeted to special conditions and constituents in various county or multi-county regions. Some of these programs remain. Others have been replaced or phased out. Regardless, the rationales and objectives for each may be open to question in a changing rural environment.

The evolution of national policy for rural areas and some of the programs that have been targeted for county or multi-county areas are discussed next.

National Rural Policy

Prior to the Great Depression, a strong national emphasis on agriculture directed considerable public policy toward rural areas (33). However, the goals of public policy during this period centered more on advancements in agriculture per se than on improvements of the Nation's social and economic conditions.

During the 1930's, programs launched under the New Deal attempted to help the Nation's poor, including poor farmers. Programs administered by the Farm Security Administration provided loans to poor farmers to enable them to purchase or maintain their farms (43). Established in the mid-1940's, the Farmers Home Administration made available low-interest loans to farmers unable to obtain credit through private sources.

Starting in the 1950's, national programs began to reflect concern with both farm and nonfarm sectors of rural areas and with human resources development. In several instances, resources were targeted for selected low-income rural areas. Examples include:

1. Rural Development Program (RDP), launched in 1955, targeted research, technical, and extension services to 50 low-income rural counties. The number was expanded later to 300 counties. RDP's foci included the development of nonfarm employment and business, and the expansion of industrial, educational, and health services (43). According to one writer, this was the first Federal program to recognize that "only a minor fraction of the farm-reared youth can find their future in farm production" (32).
2. Rural Areas Development (RAD) replaced RDP in 1961. Like its predecessor, RAD's resources were directed toward planning and coordinating activities handled through local leadership groups. Over 20,000 projects were launched under RAD's auspices between 1961-1966.

3. Area Redevelopment Administration (ARA), also established in 1961, was authorized to provide low-interest loans for industrial and business development and for water, sewage, and physical facilities in low-income and high-unemployment areas. ARA brought about 65,000 jobs into rural areas (43).
4. Economic Development Administration (EDA) superseded ARA in 1965 under the legislative provisions of the Economic Development Act. EDA's programs provided assistance for public facilities projects, job training, business loans, planning grants, and research and technical services in multi-county districts and regions. The Economic Development Act also provided for the establishment of economic development regions in five lagging regions of the country: Upper Great Lakes; New England; Coastal Plains in parts of North Carolina, South Carolina, and Georgia; Ozarks; and the Four Corners area, including portions of Utah, Arizona, Colorado, and New Mexico (43).
5. Appalachian Regional Commission was set up by the Appalachian Regional Development Act of 1965 as the coordinating organization for an integrated Federal-State comprehensive development program in the Appalachian region covering portions of 11 States plus West Virginia. Emphasis, as in most of the programs noted above, was on the development of physical infrastructure: roads, hospitals, health clinics, and vocational and technical schools (18).

Along with others, these programs represented national efforts benefiting urban and rural communities. However, the Rural Development Act of 1972 (45) established the legislation for a variety of programs as well as research "to provide for improving the economy and living conditions in Rural America" (46). Building on previous legislation, a main thrust of the Rural Development Act was toward creating jobs and stimulating business income in rural areas through loans and credit for rural industrialization.

Despite the scope of national attention, policies and programs aimed at the development of rural areas fell short of their mark. Reasons cited by policy analysts have included inadequate resources, fragmented and disparate goals, and inappropriate or poor action agendas (10, 30, 32, 33). Another important factor is the lack of an adequate rural data base on a broad range of rural conditions to guide the policymaking process (14, 30). Rural data sources have become generally available only in recent years. Existing data bases, however, can be used to analyze major themes of diversity that will contribute to the formation of rural policy and programs. This is a goal of the classification system described below.

APPROACH, DATA, AND METHODS

Social scientists have frequently devised classification systems to represent either the spatial relationships or patterns of economic homogeneity among a set of geographic units. Reflecting the degree of urban influence among metro and nonmetro counties, the Brown-Hines-Zimmer 10-category classification (20) and its subsequent adaptations have been widely used to examine rural-urban differences. Another county classification based on nine types of economic specialization (plus composite types) was used to study regional and population distributions by economic type (16). In addition, factor analytic techniques have been used to delineate the major socioeconomic dimensions present in areal data sets (1, 38, 39).

The aim here is to develop a classification system consisting of a few homogeneous categories that will capture a maximum amount of social, demographic, and economic information ultimately useful for policy analysis. Such a classification can summarize a range of conditions in rural places, thereby serving as a "paradigm of Rural America" (13).

Early discussions about potential categories in a policy-oriented classification focused on U.S. industrial structure and associated trends, the operation of national and international forces causing pressures sufficient to require decisive national responses, and the policy orientations of Federal expenditures for national programs. Drawing from these discussions as well as their knowledge of social science research on conditions in rural areas, researchers on the Rural Policies Project identified and narrowed a list of potential categories in an initial classification scheme to eight types: agriculture, Federal lands, government, manufacturing, mining, poverty, recreation, and retirement. The recreation category was omitted at a later stage in the analysis. From a rural development policy perspective, some of the concerns underlying the selection of the categories in the classification scheme are brought into sharper focus below.

1. Agriculture. This sector continues to be highly efficient owing to its 2.3 million farmers competing with one another. Until the 1970's, abundant stocks oriented domestic agricultural programs to supply-reducing and price-supporting actions. This changed in the early 1970's due to a surge in export demand. Thus, the relentless pressure of competition, together with unpredictable events (crop failures, currency fluctuations, trade protectionism) causing wide swings in prices and costs, result in differing impacts on farm communities. The differences vary especially by type of farming area: food grain, feed grain, livestock, other commodities.
2. Federal lands. In the United States, the settlement pattern was affected greatly by large blocks of land unsuited for private sector enterprises and ownership, such as arid regions, deserts, flood plains, and mountains. These remain largely in the public domain. In fact, 48 percent of the West is federally owned; 22 percent of the land in the Nation is federally owned (17). Public policies must balance the private and public interests, especially regarding water rights, grazing fees, timber sales, mining, and outdoor recreation. Several of the Nation's key areas possessing great natural beauty, and related aspects associated with outdoor recreation, lie mainly in the public domain. These areas tend to become more valuable when leisure time and disposable income increase.
3. Government. This sector with 21.6 percent of 1979 nonmetro employment, is the second largest nonmetro employer, slightly behind manufacturing (29). One of the major trends affecting areas with high concentration of government activity is decentralization. This involves a shifting of responsibility, including funding, for selected functions from Federal to State and local governments (34). The spatial impacts vary depending on the program mix involved in the shift, magnitudes of changes in Federal funding, and the timespan allowed for the adjustments to occur. The Federal Government always has the option to vary

funding for items, such as domestic military bases, veterans hospitals and border/coastal security elements, causing differing effects among the government-based areas.

4. Manufacturing. This sector became a primary source of economic growth in nonmetro areas in the 1960's. During the 1970's, nonmetro counties experienced a 24-percent increase in manufacturing jobs, compared with 4 percent in metro counties (42). Manufacturing accounted for the largest share (24.2 percent) of total employment in 1979 (29). Federal policies, along with support from State and local areas, have boosted industrial development and the creation of jobs in nonmetro areas (27). However, both durable and nondurable manufacturing have been threatened by increasing foreign competition.
5. Mining. Since energy is such a strategically important resource, unusually rapid influxes of workers and their families to oil, gas and coal-mining communities have produced boom and bust conditions with accompanying social and economic problems. Air quality regulations are expected to cause differing effects in demand for products of the low-sulfur coal producing counties in the Great Plains, compared with the relatively high-sulfur coal counties in the long-established sites in Appalachia (29, 40). There is persistent concern about taxation of exhaustible energy resources and appropriate allocation of the tax revenues.
6. Poverty. Poverty remains a serious chronic problem in certain areas of rural America (12, 22). Many of these areas where low income has persisted for decades are small, extremely rural places unable to generate the human and community resources required for a mobilized attack on poverty in their areas. At the national level, the social programs of the 1960's "war on poverty" made headway in reducing the incidence of poverty and improving living conditions of the poor through provision of different services. At the same time, transfer payments to nonmetro areas for social security, medicare, welfare, and other programs have jumped sharply in three decades, from 7 percent of total personal income in 1950 to 14 percent in 1977 (24). Policy-makers at all levels face the problem of continued provision of services to the poor at an affordable cost while reducing the growth of public transfer payments.
7. Recreation. Shorter work weeks, rising incomes, and other factors have provided leisure time and personal resources for large proportions of the general public to participate in a wide range of outdoor recreation activities. Thus, scenic and wilderness areas, such as the Rocky Mountains, New England, Great Smokies, Ozarks, and the coastal areas, have become sites for expanded development of recreation and allied businesses. Recreation areas face problems of maintaining community and economic viability when the economy is solely based on seasonal enterprises.
8. Retirement. Rising incomes, changing standards of living, increased mobility within the general population, and an increasing number of retirees have fostered a trend for retirement relocation for a growing number of retirees. The new retirement areas, many of them rural, offer desirable environment--climate and scenery--and recreational

benefits. Communities receiving large proportions of aging retirees face the need for an adequate infrastructure to provide health, social, and other services. The infusion of transfer payments income, along with other unearned income, may contribute to the resource bases in retirement areas.

The analysis for the classification system was based on data from 12 existing national sources (table 1). These data included a broad array of social, economic, and demographic information on U.S. counties. Measures were constructed for two kinds of variables: criterion variables and descriptors. The 36 criterion variables were initially developed and analyzed as possible definitions of the eight county types (app. table 1). Descriptors, the approximately 100 social, economic, and demographic county characteristics, served both methodological and descriptive purposes in the analysis (app. table 2). They aided in the evaluation of the criterion variables that were considered as possible definitions of the county types. They were also employed descriptively to develop comparative profiles of the various county types.

The analysis was restricted to 2,443 counties in the 48 contiguous States defined as nonmetro in 1974 by the U.S. Bureau of Census, based on the results of the 1970 Census.¹⁰ As shown below, it involved several steps and employed simple statistical tools.

DEVELOPING THE INITIAL CLASSIFICATION

This report deals primarily with an analysis that involved a systematic process of data reduction and evaluation to arrive at a final classification of 2,073 (85 percent) of the 2,443 nonmetro counties into one or more of seven types. It also discusses selected differences among descriptive profiles of the types.

The analysis to reduce and evaluate data was carried out in three steps: (1) correlation coefficients and frequency distributions aided in reducing the criterion variables from 36 to 17 across eight types; (2) cutting points (or threshold levels) were established for the continuous variables, and descriptive profiles were developed and compared for eight county types defined in different ways; and (3) finally, an initial classification based on seven types was created and assessed. The final classification resulted from evaluation and modification of preliminary versions. An elaboration of the results appears below.

Reducing the Criterion Variables

Possible definitions of the eight types were selected from a pool of 36 criterion variables (app. table 1). These were specially constructed measures of (1) income and/or employment characteristics, and (2) measures used in previous related research; that is, consistently agricultural county (23) or retirement immigration county.

¹⁰ The N of 2,443 nonmetro counties reflects the exclusion of Alaska and Hawaii counties and the combination of independent cities in Virginia into the associated counties as well as the combination of two counties in South Dakota and two in Wisconsin.

Table 1--Data sources

Sources of selected data and selected years ^{1/}	Sources of selected data and selected years ^{1/}
1. Unpublished income estimates from Survey of Income, Bureau of Economic Analysis (BEA), U.S. Department of Commerce (USDC), 1977-79.	8. Population counts from Advance Reports, 1980 Census of Population Bur. of Census, USDC, 1980. ^{2/}
2. Unpublished employment estimates from Survey of Employment, BEA, USDC, 1977-79.	9. Agriculture counts from Abstract of Census of Agriculture, USDC, USDA, 1978.
3. Unpublished transfer payments estimates, BEA, USDC, 1979.	10. Poverty indicators from General Income Project Working File, Economic Development Division, (EDD), Economic Research Service (ERS), USDA, 1969, 1975, 1979.
4. Fourth-count summary of social and economic characteristics from 1970 Census of Population, Bur. of Census, USDC, 1970.	11. Indicators of county well-being from Social Indicators Working File, EDD, ERS, USDA, 1970.
5. Unpublished land-area estimates from 1977 National Resources Inventory, Soil Conserv. Serv. U.S. Department of Agriculture (USDA), 1977. ^{2/}	12. Published and unpublished estimates of recipients and payments for selected social programs from Social Service Delivery Project Working File, EDD, ERS, USDA, 1980. ^{3/}
6. Unpublished population estimates for rural-urban areas, 1980 Census of Population, Bur. of Census, USDC, 1980.	
7. Unpublished land-area estimates for rural and urban areas, 1980 Census of Population, Bur. of Census, USDC, 1980. ^{2/}	

^{1/} All data were obtained from county computer files.

^{2/} Provided by Natural Resource Economics Division, ERS, USDA.

^{3/} Includes published data on Public Assistance (AFDC) recipients and cash payments, Supplemental Security Income, Social Security beneficiaries from Social Security Administration, U.S. Department of Health and Human Services, and unpublished data on Food Stamp recipients and payments from Food and Nutrition Serv., USDA.

An inspection of frequency distributions for the categorical criterion variables, grouped forms of the continuous variables, and the correlations among the variables narrowed the number of criterion variables to 17 (table 2).^{11,12}

Several variables were dropped because their values appeared to be unstable (that is, those measures based on personal income); others fell out because low correlations with other criterion variables suggested that they were not measuring the same phenomenon. For example, low correlation for sales per farm with the percentage of income and the percentage of employment from agriculture caused farm sales to be dropped.

Establishing Cutting Points

Fifteen of the 17 criterion variables selected above were continuous measures. The question became: what magnitude of a particular measure constituted a sufficient amount to include a county in a given class? Thus, it was necessary to establish cutting points or threshold levels. A decision rule was applied that one cutting point would be about one standard deviation unit above the mean with another cutting point 5 to 10 percentage points higher or lower than the first. To illustrate, applying the decision rule to the two criterion variables for agriculture--percentage of total employment and percentage of labor and proprietors' income from agriculture--yielded four ways of defining agriculture through cutting points set at 20 and 30 percent of employment and 20 and 30 percent of income; one additional definition, consistent agriculture county, increased the number of definitions to five (table 3). The decision rule was modified for the Federal lands type, where four cutting points were examined. As a result, 34 different ways of defining the eight types were explored. The number of counties delineated at the different cutting points (or by the categorical criterion measures) are shown by type in table 3.

The Initial Classification

Several considerations aided the selection of one definition for each type from the pool of different criterion variables described above. These included comparing the number of counties delineated with cutting points set at different thresholds, inspecting specially prepared descriptive profiles based on a larger number of demographic, social, and economic indicators (app. table 2) to detect substantial changes in characteristics, and analyzing the differences in overlaps among types measured with various criteria. The process was also guided by the researchers' knowledge of the data sources and their judgment about the relative desirability of different definitions. For example, income measures which were judged to be somewhat more stable than employment measures were favored. The small number of counties (63) having 10 percent or more of labor and proprietary income from recreation prompted the decision to eliminate recreation from the initial classification. The remaining seven types were defined as follow:

¹¹ Continuous distributions were typically collapsed into 10 categories. For example, percentage of income from agriculture was transformed into 10 groups: 0-9.9 percent, 10-19.9 percent, and so forth.

¹² Selected correlations are shown in appendix table 3.

Table 2—Initial classification: Selected criterion variables by county type, means, and standard deviations

County type variable <u>1/</u>	Means <u>2/</u>	Standard deviations <u>2/</u>
Agriculture:		
Percent total employment from agriculture	18.7	12.7
Percent lp income from agriculture <u>3/</u>	14.4	14.4
Consistent agriculture county	<u>4/</u>	<u>4/</u>
Federal lands:		
Percent Federal land	9.0	18.9
Government:		
Percent total employment from government	17.6	7.5
Percent lp income from government <u>3/</u>	17.2	10.1
Manufacturing:		
Percent total employment from manufacturing	15.9	12.4
Percent lp income from manufacturing <u>3/</u>	20.5	16.1
Mining:		
Percent total employment from mining	2.6	6.6
Percent lp income from mining <u>3/</u>	5.0	12.5
Poverty:		
Percent families in poverty	22.8	13.4
Persistent low-income (PLI) county	<u>4/</u>	<u>4/</u>
Recreation:		
Percent total employment from recreation	4.8	4.2
Percent lp income from recreation <u>3/</u>	2.9	3.3
Retirement:		
Percent population social security recipients 65 and over	12.6	3.9
Percent transfer payments to retired workers	25.7	6.3
Retirement immigration county	<u>4/</u>	<u>4/</u>

1/ See appendix 1 for full list of criterion variables, their definition, and data sources.

2/ Based on N of 2,443 U.S. nonmetro counties.

3/ Labor and proprietors' income.

4/ Categorical variable, thus means and standard deviations were not calculable.

Table 3—Initial classification: Cutting points for selected criterion variables
by county type and number of counties included

County type variable <u>1/</u>	Cutting points	Counties included	Change in number of counties
	Percent		Number
Agriculture:			
Percent total employment from agriculture	20 and over	985	
Percent total employment from agriculture	30 and over	489	-496
Percent lp income from agriculture ^{2/}	20 and over	688	
Percent lp income from agriculture ^{2/}	30 and over	368	-320
Consistent agriculture county	<u>3/</u>	657	
Federal Lands:			
Percent Federal land	15 and over	449	
Percent Federal land	20 and over	374	-75
Percent Federal land	33 and over	247	-127
Percent Federal land	40 and over	203	-44
Government:			
Percent total employment from government	20 and over	562	
Percent total employment from government	30 and over	131	-431
Percent lp income from government ^{2/}	20 and over	592	
Percent lp income from government ^{2/}	25 and over	315	-277
Percent lp income from government ^{2/}	30 and over	190	-125
Manufacturing:			
Percent total employment from manufacturing	30 and over	364	
Percent total employment from manufacturing	40 and over	109	-255
Percent lp income from manufacturing ^{2/}	30 and over	678	
Percent lp income from manufacturing ^{2/}	40 and over	338	-340
Mining:			
Percent total employment from mining	10 and over	191	
Percent total employment from mining	20 and over	81	-110
Percent lp income from mining ^{2/}	10 and over	348	
Percent lp income from mining ^{2/}	20 and over	200	-148
Poverty:			
Percent families in poverty	35 and over	433	
Percent families in poverty	40 and over	288	-145
Persistent low-income county	<u>3/</u>	242	
Recreation:			
Percent total employment from recreation	5 and over	812	
Percent total employment from recreation	10 and over	149	-663
Percent lp income from recreation ^{2/}	5 and over	247	
Percent lp income from recreation ^{2/}	10 and over	63	-184
Retirement:			
Percent population SS recipient 65 and over	15 and over	602	
Percent population SS recipients 65 and over	20 and over	111	-491
Percent transfer payments retired workers	30 and over	693	
Percent transfer payments retired workers	35 and over	144	-549
Retirement immigration county	<u>3/</u>	358	

^{1/} See appendix table 1 for full list of criterion variables, their definitions, and data sources.

^{2/} Labor and proprietors' income.

^{3/} Categorical variable defined in earlier research.

1. Agriculture. 20 percent or more total labor and proprietors' income from agriculture in 1950, 1959, 1969-71, and 1975-77.
2. Federal lands. 33 percent or more total land area in Federal ownership, 1977.
3. Government. 25 percent or more total labor and proprietors' income from government, 1979.
4. Manufacturing. 40 percent or more total labor and proprietors' income from manufacturing, 1979.
5. Mining. 20 percent or more total labor and proprietors' income from mining, 1979.
6. Poverty. Per capita personal income in bottom quintile in 1950, 1959, 1969, and 1979.
7. Retirement. 10 percent or more 1960-70 net immigration rate for whites aged 60 years and over.

The initial classification system accounted for 1,801 or 74 percent of nonmetro counties in one or more types (table 4). About 20 percent of the counties overlapped on two or more types; 642 counties were unclassified.

Table 4--Initial classification: Distribution of nonmetro counties among seven socioeconomic types

Types	Definition <u>1/</u>	Counties <u>2/</u>	Proportion of total (N=2,443)
		Number	Percent
Agriculture	Consistent agriculture county <u>3/</u>	657	26.9
Federal lands	<u>≥</u> 33% land federally owned	247	10.1
Government	<u>≥</u> 25% lp income from government <u>4/</u>	315	12.9
Manufacturing	<u>≥</u> 40% lp income from manufacturing <u>4/</u>	338	13.8
Mining	<u>≥</u> 20% percent lp income from mining <u>4/</u>	200	8.2
Poverty	Persistent low-income county <u>5/</u>	242	9.9
Retirement	Retirement immigration county <u>6/</u>	358	14.7

1/ See appendix table 1 for definitions and data sources.

2/ About 20 percent of counties overlapped on two or more types, and 26 percent fell in none of the types.

3/ ≥ 20 percent labor and proprietors' income in selected time periods.

4/ Labor and proprietors' income.

5/ Per capita income in bottom quintile in four time periods.

6/ ≥ 10 percent 1960-1970 net immigration of whites, aged 60 years and over.

The largest number of counties (657) were classified as agriculture, while the mining category had the smallest number with 200 counties.

MODIFYING THE CLASSIFICATION

Researchers on the Rural Policies Project evaluated the results of the initial classification and agreed to several modifications. The first change was to redefine manufacturing at 30 percent or more of labor and proprietors' income because the magnitude of the 40-percent cutting point seemed incongruent with the definitions of the other county types. This increased the number of manufacturing counties from 338 to 678 and reduced the unclassified counties from 642 to 435.

With manufacturing redefined at the 30-percent or more level, 2,008 counties (82.2 percent) were classified into one or more types (table 5). Nearly 60 percent of the counties fell into only one of the seven types. The least amount of overlap occurred for the agriculture counties; over 70 percent were pure agriculture counties overlapping with no other types. Poverty and Federal lands counties demonstrated the most overlap with over 75 percent of them overlapping with one, two, or three other types.

Unclassified Counties

Additional analysis was undertaken to explore the characteristics of the remaining 435 unclassified counties (table 6). Using the general procedures above for measuring criterion variables, four economic sectors--agriculture, services, manufacturing, and recreation--were examined to

Table 5--Modified classification: Number of overlapping types, by county type^{1/}

Number of overlaps	County type ^{2/}							All counties
	Agriculture : (N=657)	Federal lands : (N=247)	Government : (N=315)	Manufacturing : (N=678)	Mining : (N=200)	Poverty : (N=242)	Retirement : (N=358)	(N=2,443)
	:	:	:	:	:	:	:	:
	<u>Percent</u>							
None (One type only)	70.8	23.1	41.9	68.4	57.5	22.3	40.2	58.6
One	23.1	54.7	40.3	24.9	37.5	55.0	43.9	19.4
Two	5.8	19.4	15.9	5.8	5.0	19.0	14.2	3.8
Three	.3	2.8	1.9	.9	0.0	3.7	1.7	.4
Unclassified	— ^{3/}	—	—	—	—	—	—	17.8

1/ Manufacturing was redefined as: > 30 percent labor and proprietors' income from manufacturing, 1979.

2/ N's across county types do not sum to 2,443 because 577 counties overlapped on one or more county types.

3/ Unclassified counties overlap with no other county types.

Table 6--Modified classification: Selected characteristics
of unclassified counties 1/

Characteristics	Counties	Proportion of total
	<u>Number</u>	<u>Percent</u>
<u>> 20 percent lp income from agriculture, 1977-1979 <u>3/</u></u>	68	15.6
<u>> 15 percent lp income from services, 1979 <u>3/</u></u>	119	27.3
25 - 29.9 percent lp income from manufacturing, 1979 <u>3/</u>	78	17.9
<u>> 10 percent lp income from recreation, 1979 <u>3/</u></u>	8	1.8

1/ Counties included in none of seven types defined in table 5.

2/ Percent of unclassified counties, N = 435. Of these, 47.6 percent met criteria for one of the characteristics only, 7.6 percent for two characteristics, and 44.8 percent for none.

3/ Labor and proprietors' income.

ascertain whether slight modifications in the current definitions for the seven types or additions of other types to the classification scheme were indicated. More than 15 percent of the 435 unclassified counties had 20 percent or more of their total labor and proprietary income from agriculture in 1977-79; but nearly half (33) of these 68 counties had dropped out in one (1975-77) of the four time periods used to determine the consistent agricultural counties. An additional 25 counties had failed to make the >20-percent income in agriculture because of loss in farm income during the same time period. Counties having 15 percent or more income from the services division included 119 (27 percent) of the unclassified areas. Seventy-eight counties had between 25-30 percent of their labor and proprietors' income from manufacturing. The presence of recreation (10 percent or more income from recreation) accounted for only eight counties. Based on the foregoing criteria, activity in agriculture, services, and manufacturing accounted for 240 of the 435 unclassified counties, leaving 195 still unclassified. All but 33 of the 240 counties exhibited only one of the four characteristics. For those 33 counties with two characteristics, 20 overlapped on the manufacturing and services.

Results of the foregoing analysis on the 435 unclassified counties prompted another modification to the classification system. The number (68) of the unclassified counties that had a significant amount (20 percent or more) of labor and proprietors' income from agriculture in 1977-1979 reflected the susceptibility of the agriculture sector to supply and demand shifts and to environmental and political forces. Therefore, the agriculture county type was

redefined as 20 percent or more of labor and proprietors' income averaged over a 5-year period, 1975-1979. The revised definition attempts to reduce the constraints of an over-time dimension and still adjust for economic fluctuations.

The availability of updated estimates (1970-1980) of immigration of elderly population prompted the final modification to the retirement category: redefinition to 15 percent or more immigration of persons aged 60 years and over, 1970-1980.¹³ These changes increased the number of counties in the agriculture and retirement categories to 702 and 515, respectively.

The Final Classification

The distribution of 2,443 nonmetro counties among the seven types in the final classification is displayed in table 7. The classification system accounted for 2,073 (85 percent) of the 2,443 counties in one or more types. The largest number of counties (702) was classified as agriculture, while the mining category contained the smallest number with 200 counties.

About 60 percent (1,399 counties) fell into only one of the seven types with the least amount of overlap occurring for the agriculture and manufacturing counties (table 8). Of the agriculture counties, 68 percent were pure agriculture types, overlapping with no other types. Poverty and Federal lands counties demonstrated the most overlap with over 80 percent of counties in each of these types overlapping with one, two, or three other types. Fifteen percent (370) of the counties were unclassified.

COMPARING THE COUNTY TYPES¹⁴

To illustrate the differences among the seven types, 26 variables were selected and grouped according to four general categories of indicators characterizing U.S. nonmetro counties: demographic characteristics, population characteristics, economic well-being, and economic structure (table 9). Comparison of the mean values of the characteristics reveals some interesting differences among the types.

Agriculture counties tend to be demographically different from most of the other county types: smaller population size, more rural, less densely populated, lower rates of population change. Compared with other types, their per capita incomes, unearned income, and farming income, on average, are higher, while incomes from mining, government, personal services, and recreation are lower.

Federal lands counties exhibit substantial differences in population density (low) and population change (greater) in the two preceding decades. Population residing in the Federal lands categories tends to have lower representation of

¹³ The computation is based on net number of persons aged 50 years and over in 1970 who migrated to a county, 1970-1980, expressed as a percentage of the 1970 resident population projected to survive to age 60 years or more in 1980.

¹⁴ See Bender et al. (6) for detailed comparisons of the seven county types.

Table 7--Final classification: Distribution of nonmetro counties among seven socioeconomic types 1/

Types	Definition	Counties <u>2/</u>	Proportion of total (N=2,443)
		Number	Percent
Agriculture	≥ 20% lp income from agriculture <u>3/</u>	702	28.7
Federal lands	≥ 33% land Federally owned	247	10.1
Government	≥ 25% lp income from government <u>3/</u>	315	12.9
Manufacturing	≥ 30% lp income from mfg <u>3/</u>	678	27.7
Mining	≥ 20% percent lp income from mining <u>3/</u>	200	8.2
Poverty	Persistent low-income county <u>4/</u>	242	9.9
Retirement	Retirement immigration county <u>5/</u>	515	21.1

1/ Excludes recreation.

2/ About 27 percent of counties overlapped on two or more types, and 15 percent fell in none of the types.

3/ Labor and proprietors' income.

4/ Per capita income in bottom quintile in four time periods.

5/ ≥ 15 percent 1970-1980 net immigration of persons, aged 60 years and over.

Table 8--Final classification: Number of overlapping types, by county type

Number of overlaps	County type							All counties (N=2,443)
	Agriculture (N=702)	Federal Land (N=247)	Government (N=315)	Manufacturing (N=678)	Mining (N=200)	Poverty (N=242)	Retirement (N=515)	
	Percent							
None <u>2/</u>	67.9	17.0	35.6	64.5	55.0	17.8	34.6	57.3
One	24.6	52.2	40.3	28.3	39.0	54.1	46.6	21.9
Two	6.7	26.7	21.3	6.3	6.0	23.6	16.7	5.2
Three	.7	4.0	2.9	.9	0.0	4.5	2.1	.5
Unclassified <u>3/</u>	—	—	—	—	—	—	—	15.1

1/ N's across county type do not sum to 2,443 because 674 counties overlapped on one or more county types.

2/ One type only.

3/ Unclassified counties overlap with no other county types.

Table 9—Final classification: Selected characteristics of county types

Characteristics	County type							
	Agriculture	Federal	Government	Manufacturing	Mining	Poverty	Retirement	All
	: lands	: lands	:	:	:	:	:	: counties
	: (N=702)	: (N=247)	: (N=315)	: (N=678)	: (N=200)	: (N=242)	: (N=515)	: (N=2,443)
	:	:	:	:	:	:	:	:
Mean values								
Demographic characteristics:								
Number population, 1980(000)	11.9	22.1	28.8	36.0	20.0	15.2	27.5	25.6
Percent urban population, 1980	16.4	30.0	30.8	32.1	29.6	12.7	25.9	28.6
Number person per square mile, 1980	18.3	15.4	47.2	65.9	29.2	29.9	42.4	42.0
Percent population change 1960-1970	-6.6	7.9	6.4	4.6	-3.4	-3.5	10.8	1.2
Percent population change 1970-1980	4.8	33.2	18.8	14.0	21.5	14.2	33.3	14.6
Population characteristics:								
Percent black population 1980	6.4	1.6	7.4	12.1	2.4	23.3	7.0	8.4
Percent Spanish population, 1980	4.2	6.9	6.4	1.2	8.4	2.8	4.6	3.8
Percent population age 65 over, 1980	15.7	11.3	12.3	12.9	11.5	13.5	15.2	14.0
Percent persons age 25 and over completing high school, 1980	58.0	68.6	60.8	54.4	56.0	41.9	56.4	57.5
Percent of civilian labor force age 16 over unemployed, 1980	5.5	8.3	8.0	7.7	6.9	9.6	7.7	6.9
Economic well-being:								
Per capita income, 1979 (dollars)	7,264	6,994	6,195	6,855	7,328	4,914	6,626	6,980
Median family income, 1979 (dollars)	14,900	16,700	15,300	16,300	17,000	11,900	15,000	15,800
Percent of persons in poverty, 1980	18.7	14.5	18.5	15.7	16.4	28.4	17.0	17.0
Percent of blacks in poverty, 1980	14.4	12.3	19.9	23.6	17.3	30.4	22.0	20.1
Percent of whites in poverty, 1980	15.0	13.1	15.0	12.4	14.5	19.6	14.8	13.8
Percent of personal income from unearned sources, 1979	19.2	15.0	15.8	12.9	14.8	11.1	16.8	16.3
Per capita transfer payments, 1979 (dollars)	1,045	1,030	1,085	1,022	1,009	1,049	1,148	1,063
Ratio transfer payments to labor and proprietors' income, 1979	.27	.25	.33	.24	.23	.41	.34	.27
Percent female-headed families, 1980	8.4	8.5	10.8	11.4	8.9	14.0	9.7	10.0
Percent persons 16-64 disabled, 1980	9.8	9.8	10.4	10.9	10.8	14.8	11.9	10.4

Continued--

/ 8

Table 9—Final classification: Selected characteristics of county types—continued

Characteristics	County type								All
	Agriculture	Federal	Government	Manufacturing	Mining	Poverty	Retirement	nonmetro	
	:	lands	:	:	:	:	:	counties	
	(N=702)	(N=247)	(N=315)	(N=678)	(N=200)	(N=242)	(N=515)	(N=2443)	

Mean values

Economic structure:

Percent of labor-proprietors' income from—

Farming, 1979	33.7	10.0	9.1	7.5	6.5	15.4	11.1	14.6
Manufacturing, 1979	10.4	15.6	11.8	42.1	7.9	22.4	20.5	20.5
Mining, 1979	2.6	8.7	3.1	1.3	38.1	4.2	3.0	5.0
Government, 1979	15.9	21.8	36.6	13.2	14.2	20.4	19.3	17.2
Services division, 1979 ^{1/}	9.1	12.4	12.4	9.5	8.6	10.2	13.1	11.0
Recreation, 1979 ^{2/}	2.1	5.5	3.9	2.1	2.3	1.9	4.1	2.9

^{1/} Includes personal services; private household services; miscellaneous business and repair services, including auto; amusement and recreation services including motion pictures; professional, social and related services, including medical, legal and private educational services; and hotels and other lodging places.

^{2/} Includes eating and drinking places (retail trade), hotels and other lodging places (services division), amusement and recreation services including motion pictures (services division), and museums-art galleries (services division).

blacks, higher representation of Spanish-origin, and more high school educated members than the population in other types. Also, the Federal lands counties average more income from mining and government sectors and less from other sectors relative to most of the other groups.

Government counties, like the Federal lands group, demonstrate higher rates of population change and a larger proportion of high school educated population than the other types. Their per capita incomes average lower and percentage of government income higher than other categories.

Manufacturing counties have larger populations and tend to be more urban and populated than other groups. Their overall poverty rate is lower while the poverty rate for blacks is higher than in most other categories. They tend to be quite specialized in manufacturing. Their income from manufacturing averages over 40 percent compared with 20 percent or under for the other types and their incomes from most of the other sectors are substantially less than those in other categories.

Mining counties show higher rates of population change in the 1970-1980 decade than do other groups. The average percentage of blacks is less and the average percentage of Spanish-origin more than for other types. Per capita income and median family income average more than in the comparison groups. Income from all sectors except mining and government was lower than comparable values in the other groups.

Poverty counties have substantially lower proportions of urban population and substantially higher proportions of blacks, female-headed households, and disabled population than the other categories. Poverty rates average 28, 30, and 20 percent for all persons, black, and white respectively, compared with 16, 19, and 13 percent in the comparison group. The industrial structure is less distinct than that in the other county groups. Differences in the average incomes from farming and mining of the poverty and all nonmetro counties are negligible, while incomes from manufacturing and personal services differ only slightly from the all nonmetro group.

Retirement counties differ notably from the comparison groups on the rates of population change during both the 1960 and 1970 decades. They also exhibit higher proportions of elderly than the other groups (except agriculture), although the magnitude of the differences is not overwhelmingly large. Retirement counties have higher average incomes from personal services and recreation, and ratio of transfer payments to labor and proprietors' income is also higher than that observed in the comparison groups, due to the high proportion receiving social security and supplemental security income.

DISCUSSION

Several implications for rural development policy stem from this research. First, the perspective that the major impetus for economic development is policies and programs aimed at economic diversification needs to be reassessed. Although the aggregate view of nonmetro America indicates economic diversification, individual rural areas undergoing change have tended to become economically specialized. This suggests that policy, such as industrialization, which

focuses on a single economic sector will not benefit the development of all rural areas. Rather, a set of policies which reflects the major patterns of development among rural areas is more appropriate.

The research also demonstrates that the development of human resources is an important policy target. Like the poverty counties shown here, rural areas with disproportionate numbers of disadvantaged and dependent persons will not benefit from programs to stimulate economic growth, unless there is an investment in comprehensive human development programs for individuals who are hampered from productive work because of lack of education and job skills. However, to be successful, programs need to also include provisions for supportive services, particularly health and child care, associated with successful job performance.

The approach used and results shown in this report are a response to a persistent need in the research community. That is, major changes typically occur which deserve policymakers' attention quickly, but assembly of data and other steps in the research process take so long that results lose much of their utility. This general framework, backed by a consolidated data base, represents a flexible basis for timely analysis of conditions and changes in rural America.

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Appendix table 1— Definition of criterion variables by county type

County type variable 1/	Definition 2/	Source 3/	Mnemonic 4/
Agriculture:			
Percent total employment from agriculture	Percent of total employment from agriculture, 1977-79 5/	BEA	AGEMP; AGEMPG
Percent lp income from agriculture	Percent of total labor and proprietors' income from agriculture, 1977-79	BEA	AGLPINC; AGLPLNG
Percent personal income from agriculture *	Percent of total personal income from agriculture, 1977-79	BEA	AGPTINC; AGPTING
Percent basic sector (1) income from agriculture *	Percent of total basic sector income (excluding transfer income) from agriculture, 1977-79	BEA	AGBSINC; AGBSING
Percent basic sector (2) income from agriculture *	Percent of total basic sector income (including transfer income) from agriculture, 1977-79	BEA	AGBSTINC; AGBSTING
Percent persons aged 14 + employed agriculture	Percent of persons aged 14 and over, employed in agriculture, 1970	Census of Population	V12; V12G
Agriculture sales	Gross sales per farm operation, 1977-79	Census of Agriculture	AGSALES; AGSALEG
Consistent agriculture county	County with 20 percent or more total labor and proprietors' income from agriculture in 1950, 1959, 1969-1971, 1975-1977 6/	BEA and USDA	GROUPAG2

See footnotes at end of table.

Continued—

Appendix table 1— Definition of criterion variables by county type — Continued

County type variable <u>1/</u>	:	Definition <u>2/</u>	:	Source <u>3/</u>	:	Mnemonic <u>4/</u>
Federal lands:						
Percent Federal land		Percent of total land acres that are federally owned, 1977		USDA		FLCUT
Government:						
Percent total employment from government		Percent of total employment from government, 1979 <u>7/</u>		BEA		EMPGVT;EMPGVTG
Percent lp income from government		Percent of total county income from government, 1979 <u>7/</u>		BEA		INCGOVT;INCGOVTG
Manufacturing:						
Percent total employment from manufacturing		Percent of total employment from manufacturing, 1979		BEA		MFGEMP;MFGEMPG
Percent lp income from manufacturing		Percent of total labor and proprietors' income from manufacturing, 1979		BEA		INCMFG;INCMFPG
Percent basic sector (1) income from manufacturing*		Percent of total basic sector income (excluding transfer income from manufacturing, 1979		BEA		MFGBSINC;MFGBSING
Percent basic sector (2) income from manufacturing*		• Percent of total basic sector income (including transfer income) from manufacturing, 1979		BEA		MFGBST;MFGBSTG
Percent personal income from manufacturing*		Percent of total personal income from manufacturing, 1979		BEA		MFGPTT;MFGPTTG
Percent employment from durable manufacturing		Percent of total employment from durable goods manufac- turing, 1970		Census of Population		V15; V15G
Percent employment from nondurable manufacturing		Percent of total employment, from nondurable goods manufacturing, 1970		Census of Population		V16; V16G

See footnotes at end of table.

Continued

Appendix table 1— Definition of criterion variables by county type — Continued

County type variable <u>1/</u>	Definition <u>2/</u>	Source <u>3/</u>	Mnemonic <u>4/</u>
Mining:			
Percent total employment from mining	Percent of total employment from mining, 1979	BEA	MINEMP;MINEMPG
Percent lp income from mining	Percent of total labor and proprietors' income from mining, 1979	BEA	MINLPINC;MINLPINC
Percent personal income from mining *	Percent of total personal income from mining, 1979	BEA	MINPPT;MINPPTG
Percent persons 14 + employed mining	Percent of persons aged 14+ employed in mining, 1970	Census of Population	V13; V13G
Percent basic sector income (1) from mining *	Percent of total basic sector income (excluding transfer income) from mining, 1979	BEA	MINBSINC;MINBSINC
Percent basic sector income (2) from mining *	Percent of total basic sector income (including transfer income) from mining, 1979	BEA	MINBST;MINBSTG
Poverty:			
Percent families in poverty	Percent of families with incomes classified as poverty, 1970	Census of Population	ROVFAM;ROVFAMG
Percent persons in poverty	Percent of unrelated individuals aged 14+ with incomes classified as poverty, 1970	Census of Population	ROVCOUNT;ROVCTG
Persistent low-income (PLI) county	County with per capita personal income in bottom quintile in each of four time periods 1950, 1959, 1969, and 1979	BEA/USDA	PLI79
Percent total personal income in poverty	Percent of total personal income classified as poverty, 1970	Census of Population	ROVINC;ROVING

See footnotes at end of table.

Continued—

Appendix table 1— Definition of criterion variables by county type — Continued

County type variable <u>1/</u>	:	Definition <u>2/</u>	:	Source <u>3/</u>	:	Mnemonic <u>4/</u>
Recreation:						
Percent total employment from recreation		Percent of total employment from recreation including eating/drinking places, hotels/other lodging, and amusement establishments, 1979		BEA		REC2MP; REC2MPG
Percent lp income from recreation		Percent of total labor and proprietors' income from recreation, including eating/drinking places, hotels/other lodging, and amusement establishments, 1979		BEA		RECINC; RECINC G
Percent persons aged 14 + employed recreation		Percent of persons aged 14+ employed in entertainment/recreation services, 1970		Census of Population		V22; V22G
Retirement:						
Percent population social security recipients 65+		Percent of total population who are social security recipients aged 65+, 1980		HHS		SSRE65; SSRE65G
Percent transfer payments to retired workers		Percent of total transfer payments to retired workers, 1979		BEA		RWPAY; RWPAYG
Percent population aged 65+		Percent of total population aged 65+, 1970		Census of Population		AGED65G; AGOV65G

See footnotes at end of table.

Continued—

Appendix table 1— Definition of criterion variables by county type — Continued

County type variable <u>1/</u>	:	Definition <u>2/</u>	:	Source <u>3/</u>	:	Mnemonic <u>4/</u>
Percent population aged 75+	:	Percent of total population aged 75+ 1970	:	Census of Population	:	AGED75;AGOV75G
Retirement immigration county	:	County with 10 percent or greater 1960-70 net immigra- tion rate for whites aged 60+ <u>8/</u>	:	Census of Population	:	V30;RETGB

1/ Variables deleted because of mathematical peculiarities are indicated by an *. 1p designates labor and proprietors' income.

2/ The income data, as calculated by BEA, include earnings for farm and nonfarm proprietors. Employment data for the farm sector include farm proprietors. However, employment data for the nonfarm sectors exclude proprietors.

3/ Description of the sources appears in table 1.

4/ Mnemonics refers to SPSS file names assigned to continuous and ordinal grouped forms of the variables (15, 36).

5/ To reduce fluctuation effects, 3-year annual averages were computed for agricultural income and employment measures based on BEA data.

6/ Consistent agriculture counties were defined in an Economic Research Service study dealing with U.S. counties' economic dependence on farming (23).

7/ Measures for government include State, local, Federal, and military.

8/ Based on a rate where the denominator is number of whites aged 50 and over in 1960 expected to survive in 1970, and the numerator is number of whites aged 60 and over in 1970 minus expected survivors, 1970.

Appendix table 2—Definition of descriptor variables by category

Category variable mnemonic <u>1/</u>	Definition	Source <u>2/</u>
Population:		
V44	Total county population, 1980	Census of Population
URBOP	Percent of population urban, 1980	Census of Population
RURALOP	Percent of population rural, 1980	Census of Population
PCHG78	Rate of population change, 1970-80	Census of Population
PCHG67	Rate of population change, 1960-70	Census of Population
NETMIG67	Net migration rate, 1960-70	Census of Population
NETMIG75	Net migration rate, 1970-75	Census of Population
BLKOP80	Percent of population black, 1980	Census of Population
WHTOP80	Percent of population white, 1980	Census of Population
SPNOP80	Percent of population, Spanish, 1980	Census of Population
V33	Population class of largest city, 1970	Census of Population
Other Demographic:		
V10	Residence/adjacency code	<u>3/</u>
V7	Census region	Census of Population
LAND80	Land area in square miles, 1980	Census of Population
PDENS80	Population per square mile, 1980	Census of Population
VAR2	Median education, 1970	Census of Population
VAR4	Percent of population aged 16-64, 1970	Census of Population
VAR18	Percent of 16-17 year-olds in school, 1970	Census of Population
AGEU17	Percent of population aged 17 and under, 1970	Census of Population
AGED65G	Percent of population aged 65+ 1970 <u>5/</u>	Census of Population
AGED75	Percent of population aged 75+ 1970 <u>5/</u>	Census of Population
BBOOM	Percent of population aged 6-24 in 1970	Census of Population
PEAKEM	Percent of population aged 6-17, 1970	Census of Population
V31	Presence/absence of senior state university, 1970	Census of Population
Income:		
PCAP79	Per capita income, 1979	BEA
	Percent of labor and proprietors' income from:	
AGLPINC	agriculture, 1977-79 <u>4/</u>	BEA
MINLPINC	mining, 1979 <u>4/</u>	BEA
INCASFF	agricultural services, fisheries, forestry, and rest of world, 1979	BEA
INCMFG	manufacturing, 1979 <u>4/</u>	BEA
INCTCPU	transportation, communication, and public utilities, 1979	BEA

See footnotes at end of table.

Continued—

Appendix table 2 — Definition of descriptor variables by category—Continued

Category	:	:	:
variable mnemonic 1/	:	Definition	Source 2/
:	:	:	:
INCWLTR		wholesale trade, 1979	BEA
INCRTR		retail trade, 1979	BEA
INCFINRE		finance, insurance, real estate, 1979	BEA
INCSERV		services, 1979	BEA
INCONST		construction, 1979	BEA
INCOVGT		government, 1979 4/	BEA
VARI		Median family income, 1970	Census of Population
AVFAMNG		Average family income, 1970	Census of Population
		Percent of aggregate family income from:	
INCSW		salaries and wages, 1970	Census of Population
INCNFSE		nonfarm self-employed, 1970	Census of Population
INCFSE		farm self-employed, 1970	Census of Population
INCSSRR		social security/railroad retirement, 1970	Census of Population
INCPA		public assistance, 1970	Census of Population
INCOTHR		other sources 1970	Census of Population
		Percent of employed persons aged 14+	
		with income from:	
EMPWS		salaries and wages, 1970	Census of Population
EMPNFSE		non-farm self-employed, 1970	Census of Population
EMPFSE		farm self-employed, 1970	Census of Population
EMPSSRT		social security/railroad retirement, 1970	Census of Population
EMPPAWL		public assistance, 1970	Census of Population
Employment:			
		Percent of total employment from:	
AGEMP		agriculture, 1977-1979 4/	BEA
MINEMP		mining, 1979 4/	BEA
EMPAGFF		agricultural services, fisheries, forestry, and rest of world, 1979	BEA
EMPCONST		construction, 1979	BEA
EMPMFG		manufacturing, 1979 4/	BEA
EMPTCPU		transportation, communications, and public utilities, 1979	BEA
EMPWTR		wholesale trade, 1979	BEA
EMPRTR		retail trade, 1979	BEA

See footnotes at end of table.

Continued—

Appendix table 2—Definition of descriptor variables by category—Continued

Category variable mnemonic <u>1/</u>	Definition	Source <u>2/</u>
EMPFINRE	finance, insurance, and real estate, 1979	BEA
EMPSERV	services, 1979	BEA
EMPGVT	government, 1979	BEA
EPI980	Percent of civilian labor force aged 14+ employed, 1980	<u>5/</u>
	Percent of employed persons aged 14+ employed in:	
V12	agriculture, 1970	Census of Population
V13	mining, 1970	Census of Population
V14	construction, 1970	Census of Population
V15	durable manufacturing, 1970	Census of Population
V16	nondurable manufacturing, 1970	Census of Population
V17	transportation, 1970	Census of Population
V18	retail trade, 1970	Census of Population
V19	finance, insurance, real estate, 1970	Census of Population
V20	repair services, 1970	Census of Population
V21	personal services, 1970	Census of Population
V22	entertainment, recreational services, 1970	Census of Population
V23	professional/related services, 1970	Census of Population
V24	public administration, 1970	Census of Population
V26	Percent of population with place of work outside county or residence, 1970	Census of Population
Social:		
VEITRANS	Percent of total transfer payments for veterans programs, 1979	BEA
RECAFDC	Percent of population receiving aid to families with dependent children, 1980	HHR
RECSS	Percent of population receiving social security, 1980	HHR
RECFS	Percent of population receiving food stamps, 1980	USDA
RECSSI	Percent of population receiving supplementary security income, 1980	HHR
RWPAY	Percent of total transfer payments for retired workers 1979	BEA
SSRE65	Percent of population receiving social security who are aged 65+ 1980	HHR

See footnotes at end of table.

Continued—

Appendix table 2 — Definition of descriptor variables by category—Continued

Category variable mnemonic <u>1/</u>	Definition	Source <u>2/</u>
RECEMP	Percent of total employment from recreation, 1979 <u>5/</u>	BEA
RECLNC	Percent of labor/proprietary income recreation, 1979 <u>5/</u>	BEA
V30	High retirement immigration county, 1960-70 <u>5/</u>	Census of Population
V32	Presence/absence of dam, 1970	Census of Population
V34	Presence/absence of military population, 1970	Census of Population
VARB05	Percent of dwelling units with complete plumbing, 1970	Census of Population
VARB16	Mortality rate (1965-69 annual average) from influenza or pneumonia per 100,000 population, 1970	<u>6/</u>
VARB17	Percent of persons aged 17 and under living with both parents, 1970	Census of Population
VARB14	Mortality rate (1965-69 annual average) from all causes per 10,000 population, 1970	<u>6/</u>
VARB19	Mortality rate from suicide (1965-69 annual average) per 100,000 population, 1970	<u>6/</u>
VARB20	Mortality rate (1965-69 annual average) from cirrhosis of the liver per 100,000 population, 1970	<u>6/</u>
HR128	Percent of families headed by female, 1970	Census of Population
SEST	Index of socioeconomic status	<u>7/</u>
HEALTHT	Index of health status	<u>7/</u>
FAMSTT	Index of family status	<u>7/</u>
SPT	Index of alienation	<u>7/</u>
POVCOUNT	Percent of unrelated individuals classified in poverty, 1970	Census of Population
POVINC	Percent of aggregate family income classified as poverty income, 1970	Census of Population
POVFAM	Percent of families classified in poverty, 1970	Census of Population
INDFOVIN	Percent of aggregate income for persons aged 14+ classified as poverty income, 1970	Census of Population

See footnotes at end of table.

Continued—

Appendix table 2 — Definition of descriptor variables by category—Continued

Category variable mnemonic <u>1/</u>	:	Definition	:	Source <u>2/</u>
	:		:	
PLI	:	Persistent low-income county, 1969	:	<u>8/</u>
PLI79	:	Persistent low-income county, 1979	:	<u>8/</u>
Other:				
V7803	:	Value of farmland and buildings per farm, 1978	:	Census of Agriculture
AGSALES	:	Gross sales per farm, 1978	:	Census of Agriculture
CROPAC78	:	Percent of total farm acreage in crops, 1978	:	Census of Agriculture
HCRAC78	:	Percent of total farm acreage harvested, 1978	:	Census of Agriculture
OFFFARM	:	Percent of farm operators who worked one or more days off-farm, 1978	:	Census of Agriculture
OFFFARMB	:	Percent of farm operators who worked 100 or more days off-farm, 1978	:	Census of Agriculture
TENANT	:	Percent of farms classified as tenant, 1978	:	Census of Agriculture
FAMFARM	:	Percent of farms classified as individual/family, 1978	:	Census of Agriculture
PARTFARM	:	Percent of farms classified as partnership, 1978	:	Census of Agriculture
CORPFARM	:	Percent of farms classified as corporation, 1978	:	Census of Agriculture

1/ Mnemonics refer to SPSS file names assigned to variables (15, 36).

2/ Description of the sources appears in table 1.

3/ Ten geographic categories based on nonmetro status, population size, and metro adjacency (20).

4/ Variable was also a criterion variable, see appendix table 1.

5/ Data obtained from Department of Labor and included in Economic Research Service Social Security Delivery Project file.

6/ Constructed from Vital Statistics data for ERS Social Indicators Working File.

7/ Developed as part of ERS Social Indicators study (38).

8/ Developed in ERS General Income Study (12, 22).

Appendix table 3 — Zero-order correlations for selected criterion variables

Criterion variable ^{1/}	X ₂	X ₃	X ₄	X ₅	X ₆	X ₇	X ₈	X ₉	X ₁₀	X ₁₁	X ₁₂	X ₁₃	X ₁₄
X ₁ , Pct. total employment from agriculture	0.79	-0.20	-0.15	-0.05	-0.44	-0.43	-0.17	-0.10	0.20	-0.36	-0.23	0.34	0.30
X ₂ , Pct. lp income from agriculture ^{2/}	1	-.16	-.10	-.16	-.39	-.42	-.18	-.17	.07	-.25	-.21	.30	.33
X ₃ , Pct. Federal Land		1	.25	.19	-.13	-.12	.18	.12	-.16	.39	.33	-.22	-.14
X ₄ , Pct. total employment from government			1	.85	-.30	-.30	-.06	-.06	.01	.06	.05	-.21	-.30
X ₅ , Pct. lp income from government ^{2/}				1	-.28	-.28	-.14	.04	.05	.07	.14	-.15	-.26
X ₆ , Pct. total employment from manufacturing					1	.97	-.24	-.24	.02	-.17	-.19	-.19	-.13
X ₇ , Pct. lp income from manufacturing ^{2/}						1	-.25	-.26	-.03	-.15	-.17	-.17	-.09
X ₈ , Pct. total employment from mining							1	.86	.02	-.01	-.06	-.21	-.20
X ₉ , Pct. lp income from mining ^{2/}								1	.03	-.03	-.04	-.16	-.17
X ₁₀ , Pct. families in poverty									1	-.35	-.22	-.09	-.55
X ₁₁ , Pct. total employment from recreation										1	.93	-.09	-.06
X ₁₂ , Pct. lp income from recreation ^{2/}											1	-.05	.03
X ₁₃ , Pct. population Social Security recipients, aged 65+												1	.66
X ₁₄ , Pct. transfer payment to retired workers													1

^{1/} Three of the 17 criterion variables were categorical (consistent agriculture county, persistent low-income county, and retirement immigration county). Thus, correlation coefficients were not calculable.

^{2/} Refers to labor and proprietors' income.